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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/540,965	08/25/2005	Takuji Higashioji	TOR-05-1179	6051

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EXAMINER	
NELSON, MICHAEL B	

ART UNIT	PAPER NUMBER
1794	

NOTIFICATION DATE	DELIVERY MODE
03/11/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pto.phil@dlapiper.com

Office Action Summary	Application No.	Applicant(s)	
	10/540,965	HIGASHIOJI ET AL.	
	Examiner	Art Unit	
	MICHAEL B. NELSON	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 January 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6,10-14 and 28-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 2, 6, 10-14, 28-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments filed on 01/15/10 have been entered. Claims 1, 2, 6, 10-14, 28-40 are currently under examination on the merits. The previous 112 2nd paragraph rejections have been withdrawn because of applicant's amendments.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 2, 8, 10-14, 28, 29 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (JP 10-0245542), see English language equivalent Hibiya et al. (U.S. 6,136,420), in view of Perez et al. (U.S. 6,331,343).

Regarding claims 1 and 28, Hibiya et al. discloses a laminated film comprising a coextruded B/A/B layered structure (C15, L35-50) with layers B being biaxially stretched but non-porous polyester (C4, L35-45, C6, L5-35) and layer A being a biaxially stretched, porous layer (C4, L25-35) of polyester and an immiscible polymer (i.e. liquid crystal polyester, C5, L5-15). The liquid crystal polyester immiscible polymer is disclosed as being present at 5-45% (See Abstract) which leaves 95-55% non-liquid crystal polyester (i.e. the polyethylene terephthalate as disclosed in Example 1, C20, L25-60), which falls within the claimed range. The process of stretching the film is disclosed as causing the cells (See Abstract). In one example the relative thickness of the layers are disclosed as B/A/B=20/40/20 (i.e. 50% porous layer), which falls within the claimed range (Table 4, C26). The fine cells of the A layer are a network structure.

Hibiya et al. does not specifically disclose the instant claimed specific gravity, however, one of ordinary skill in the art would adjust the amount of bubbles (i.e. amount of void space and therefore specific gravity) in the network containing layer, through routine experimentation, in order to optimize the mechanical strength (among other properties) of the overall laminate.

Regarding the connected linear elements limitations, the immiscible polymer separation process of Hibiya et al., especially at higher concentrations of immiscible polymer (i.e. 45%) would produce a structure having heterogeneous zones (i.e. cells) of continuous phase polymer

and discrete phase polymer (i.e. immiscible polymer). The stretched cells, or the continuous phase polymers which run between them, would be of a substantially linear shape and would be interconnected. Perez et al. is directed to a similar immiscible polymer blend which is stretched to create voids (i.e. cells) (See Abstract). Perez et al. affirms that in this process, the voids "lack distinct boundaries" and are therefore interconnected (C6, L20-25).

Regarding claims 2, 8, 10-14, 29 and 40, Hibiya et al. discloses all of the limitations as set forth above. Additionally, Hibiya et al. discloses that the non-fine bubble layers are on both sides of the bubble layer. The liquid crystal polyester immiscible polymer is disclosed as being present at 5-45% (See Abstract). In one example the relative thickness of the layers are disclosed as B/A/B=20/40/20 (i.e. 50% porous layer), which falls within the claimed range (Table 4, C26). Non-liquid crystal polyester (i.e. the polyethylene terephthalate as disclosed in Example 1, C20, L25-60) is disclosed in both A and B layers.

Regarding the various physical properties of claims 12-14, the amount of void space (i.e. the amount of bubbles) is a variable that one having ordinary skill in the art would have found obvious to modify, through routine experimentation, to optimize the mechanical strength, thermal insulation and thermal expansion characteristics of the overall laminate.

With respect to claim 40, Hibiya et al. discloses that the stretching of the film occurs in a first longitudinal stretching step of 3-7 draw ratio and a subsequent transverse stretching operation to render the film biaxially stretched at a ration of 3-7 (C16, L20-35). Hibiya et al. also discloses that the stretching operations may be accomplished in multiple steps which, if applied to the first longitudinal stretching would result in a slight partial stretching to a first draw

ratio followed by at least one subsequent longitudinal stretching operation to the final draw ratio (C16, L30-40). Because of the nature of stretching, arriving at a ratio of 3-7 would require the film to be stretched at ratios o 1.05-1.8 before achieving ratios of 3-7. Hence Hibiya et al. implicitly discloses the draw ratios as instantly claimed and the breaking up of the stretching operations into multiple steps.

6. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (JP 10-0245542), see English language equivalent Hibiya et al. (U.S. 6,136,420), in view of Perez et al. (U.S. 6,331,343) as applied to claim 1 above, and further in view of Nakatani et al. (2001/0003610).

Regarding claims 30-32, Hibiya et al. discloses all of the limitations as set forth above. Hibiya et al. does not explicitly disclose electronic circuitry as an commercial application. Nakatani et al. discloses a void containing, insulating, base material with tackfree (i.e. release films) on both sides thereof for use with electronic circuits (See Abstract).

The inventions of both modified Hibiya et al. and Nakatani et al. are drawn to the field of void containing laminates and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have used the void containing laminate of modified Hibiya et al. as a tack-free electrically insulating circuit material as taught by Nakatani et al. for the purposes of imparting improved marketability to the invention.

7. Claims 6 and 33-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takashi (JP 10-0245542 see English language equivalent Hibiya et al. (U.S. 6,136,420), in view

of Perez et al. (U.S. 6,331,343) as applied to claim 1 above, and further in view of Nakamura et al. (U.S. 5,830,940).

Regarding claims 6 and 33-36, Hibiya et al. discloses all of the limitations as set forth above. Hibiya et al. only discloses a general liquid crystal polyester ([0017]) for use with the non-liquid crystal polyester ([0009]). Nakamura et al. discloses a liquid crystal polyester which was known to be made by copolymerizing polyethylene terephthalate with p-hydoxybenzoic acid (C1, L20-50) and which exhibits superior flowability, thermal resistance and mechanical properties.

The inventions of both Hibiya et al. and Nakamura et al. are drawn to the field of liquid crystal polyesters and therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to have modified the non-specific liquid crystal polyester of Hibiya et al. by using the specific example of a liquid crystal polyester as taught by Nakamura et al. for the purposes of imparting superior flowability, thermal resistance and mechanical properties.

Given the beneficial properties of the liquid crystal polyester of Nakamura et al., it would have been obvious to one having ordinary skill in the art to have adjusted the relative amount of liquid crystal polyester to greater than the 45% disclosed in Hibiya et al. (i.e. including amounts greater than 50% as instantly claimed) in order to impart a higher degree of the beneficial properties mentioned in Nakamura et al. to the final product of Hibiya et al.

Regarding claim 39, Hibiya et al. discloses all of the limitations as set forth above. Additionally, Hibiya et al. discloses that reclaimed scrap chips of previous runs of production could be recycled back into the production line to contribute to at least part of the cell containing layer composition (C6, L40-C7, L25 and Comparative Example 2, C21, L10-25). The reclaimed

chips being used from previous examples would contain the continuous and discrete phase polymers at the relative amounts disclosed in Hibiya et al., which read on the instant claimed ranges.

Response to Arguments

8. Applicant's arguments of 01/15/10 have been considered but are not persuasive.

9. Applicant argues that there are so many possible candidate immiscible materials in Hibiya that it would be non-obvious to have selected liquid crystal polyesters from the list. The examiner disagrees. The list including the instant liquid crystal polyesters includes only 7 other possible materials and therefore is no so long as to make it non-obvious for one having ordinary skill in the art to have selected the instant material.

10. The examiner notes that applicant makes references to the liquid crystal polyester structure being related to the combination of Perez and yet Perez is being used in the rejection only to show what the structure of Hibiya would look like in order to show how Hibiya reads on the claims. Perez is being used in no way to modify the components of Hibiya or the method of making the film of Hibiya. The liquid crystal polyester is disclosed entirely by Hibiya and is not affected by the Perez reference.

11. Applicant argues unexpected result; however the evidence provided is insufficient. Applicant has provided only one example to show an unexpected different in the films having less than 5% liquid crystal polyester. The one example at 3% is insufficient. At the very least an example at 4% would be needed to show the definiteness of the lower 5% endpoint and to establish the criticality of the range for achieving the unexpected results. Also, no evidence has

been presented to show the criticality of the upper, 25% endpoint (i.e. a showing that at 26% the film no longer posses the unexpected result).

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL B. NELSON whose telephone number is (571) 270-3877. The examiner can normally be reached on Monday through Thursday 6AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Patricia L. Nordmeyer/
Primary Examiner, Art Unit 1794

/MN/
03/03/10